

NEW PLEISTOCENE NEOGASTROPODA FROM THE NEW HEBRIDES

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ABSTRACT

One new genus and eleven new species, representing six families of neogastropod mollusks, are described from the highly fossiliferous beds of the Navaka sands on the island of Santo. Also included is a highly decorated cone, possibly identical with a living species. The fossiliferous sediments were deposited at moderate depths in an off-reef environment.

INTRODUCTION

Several recent publications have cited the occurrence on the island of Santo, New Hebrides, of richly fossiliferous Pleistocene sediments (Mallick, 1971, 1973, 1974, 1975; Mallick and Greenbaum, 1975; Greenbaum, 1974, 1975). Collections of fossils made by Messrs. Mallick and Greenbaum of the New Hebrides Condominium Geological Survey were sent to the U.S. National Museum for identification starting in 1970. They proved of such interest that Thomas Waller of that institution and Warren Blow of the U.S. Geological Survey visited the island in 1974 to collect bulk samples. As work on all of these collections proceeds, it becomes apparent that the Santo sediments contain perhaps the richest and most diversified and certainly the best preserved fauna of fossil mollusks yet discovered in the islands of the Pacific, possibly in all of the Indo-Pacific region. Recently I described two new volutes from the area (Ladd, 1975). Since that time eleven other new species of mollusks have appeared, a surprisingly large number in view of the demonstrated Pleistocene age of the beds. The entire molluscan assemblage is being studied, but it will necessarily be years before a comprehensive report is published. The purpose of the present paper is to describe the additional new forms that have appeared.

LOCATION

Localities where fossils were collected are shown on Fig. 1. SM242 on the Kere River is 166°

55.74'E, 15°34'S at an altitude of 70 meters. U.S. Geological Survey Cenozoic locality numbers 25715 and 25718 cover the same spot. SM43 on the Navaka River is 166°51.04'E, 15°36.08'S at an altitude of 50 meters. U.S. Geological Survey Cenozoic locality numbers 25731, 25736 and 25742 are in the same outcrop area. All are on the island of Santo, New Hebrides.

A collecting locality SG79 is mentioned in the text but does not appear on the map. It includes float from a tributary to the Sarakata River 20 km. northeast of SM242.

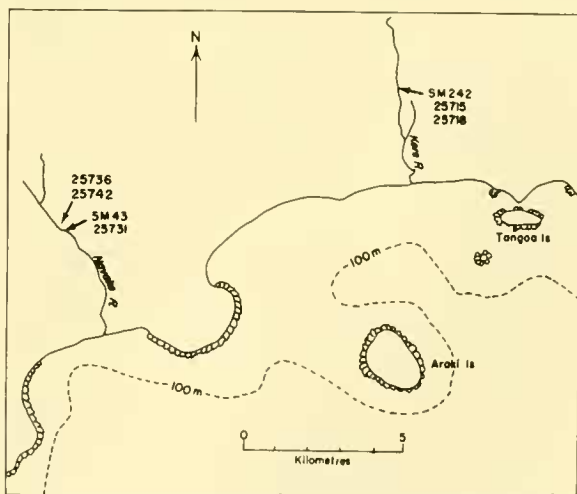


FIG. 1 Part of south Santo, New Hebrides, showing the location of fossil sites on the Navaka and Kere Rivers (after Mallick and Greenbaum, 1975). Numbers without prefix are USGS Cenozoic locality numbers.

STRATIGRAPHY

When Mawson studied the geology of the New Hebrides some seventy years ago he collected a large number of fossil mollusks from beds outcropping near Tasiriki on the southwest coast of Santo. He referred to these beds as the Tasiriki foundation-beds (1905, p. 448, 451). Mallick and Greenbaum (1975, p. 8) identify them with the Navaka Sands. Mawson pointed out that the beds at Tasiriki were intermediate in character between the soft "soapstone" (calcareous clay) and fossiliferous cinder beds. Mallick noted that the typical beds were soft unlithified sands and silts with some gravel. Mallick and Greenbaum mapped the geology of a part of south Santo, the area covered including the fossiliferous beds on the Navaka and Kere Rivers. Ladd (1975) referred to the fossiliferous sediments as marls, using the term rather loosely. In their 1975 discussion, Mallick and Greenbaum refer to the SM242 outcrops on the Kere River as the Kere Shell Bed—a sediment composed of 50-70% calcareous skeletons and fragments in a gray silt. The unit had an observed thickness of at least 1 meter and its base appeared to dip SSE at about 5 degrees.

PALEOECOLOGY

A brief summary on this subject was included in a paper describing two new fossil volutes from Santo (Ladd, 1975). At present there is little to be added to that account. I still favor the view that the fossiliferous beds were accumulated on an off-shore shelf at depths in excess of 50 meters. In this connection it may be noted that Hedley, who examined the numerous fossil mollusks collected by Mawson from Tasiriki on Santo, was reminded of an assemblage collected elsewhere in 15 fathoms (27 meters) (Hedley, 1905, p. 477).

The high percentage of new species of mollusks contained in the beds may reflect present lack of knowledge of the existing fauna rather than great age. Very little dredging has been done in the New Hebrides at depths comparable to those postulated for the Navaka Sands. Some of the fossil species here described as new may eventually be found living in the existing seas. The cone, *Kenyonia*, here described, may be identical with a species that lives today at depths of 150-190 meters in Japanese waters.

AGE

In 1970 Miss Ruth Todd of the U.S. Geological Survey reported on the rich and beautifully preserved Foraminifera contained in the sands found on the Navaka River at SM43. She noted at least 150 species of benthonics and about 18 species of planktonics. Among the latter was *Globorotalia truncatulinoides* (d'Orbigny), indicating an age no older than Pleistocene. (R. Todd, written communication August 10, 1970).

As noted in 1975 (Ladd, p. 136) a Uranium-Thorium age determination on well-preserved coral from SM242 by Barney Szabo of the U.S. Geological Survey gave a figure of 14,000 years, a date at approximately the Pleistocene-Holocene boundary. This figure seemed small in view of the field relations and the occurrence of undescribed species of mollusks and, at Mr. Szabo's suggestion, a carbon 14 test of the same coral was made. This determination, by Dr. Robert Stukenrath of the Radiation Biology Laboratory of the Smithsonian Institution, gave a figure of $25,280 \pm 460$ years—a place clearly in the Pleistocene.

SYSTEMATICS

Order Neogastropoda

Family Coralliophilidae

Genus *Coralliophila* H. and A. Adams

Adams, H. and A. 1853, Genera of Recent mollusca, vol. 1, p. 135.

Type (by subsequent designation, Iredale, 1912 Mal. Soc. London, Proc. Vol. 10, p. 221): *Murex neritoideus* Chemnitz = *Purpura violacea* Kiener. Holocene, Pacific.

Coralliophila mallicki new species

Figs. 5-7

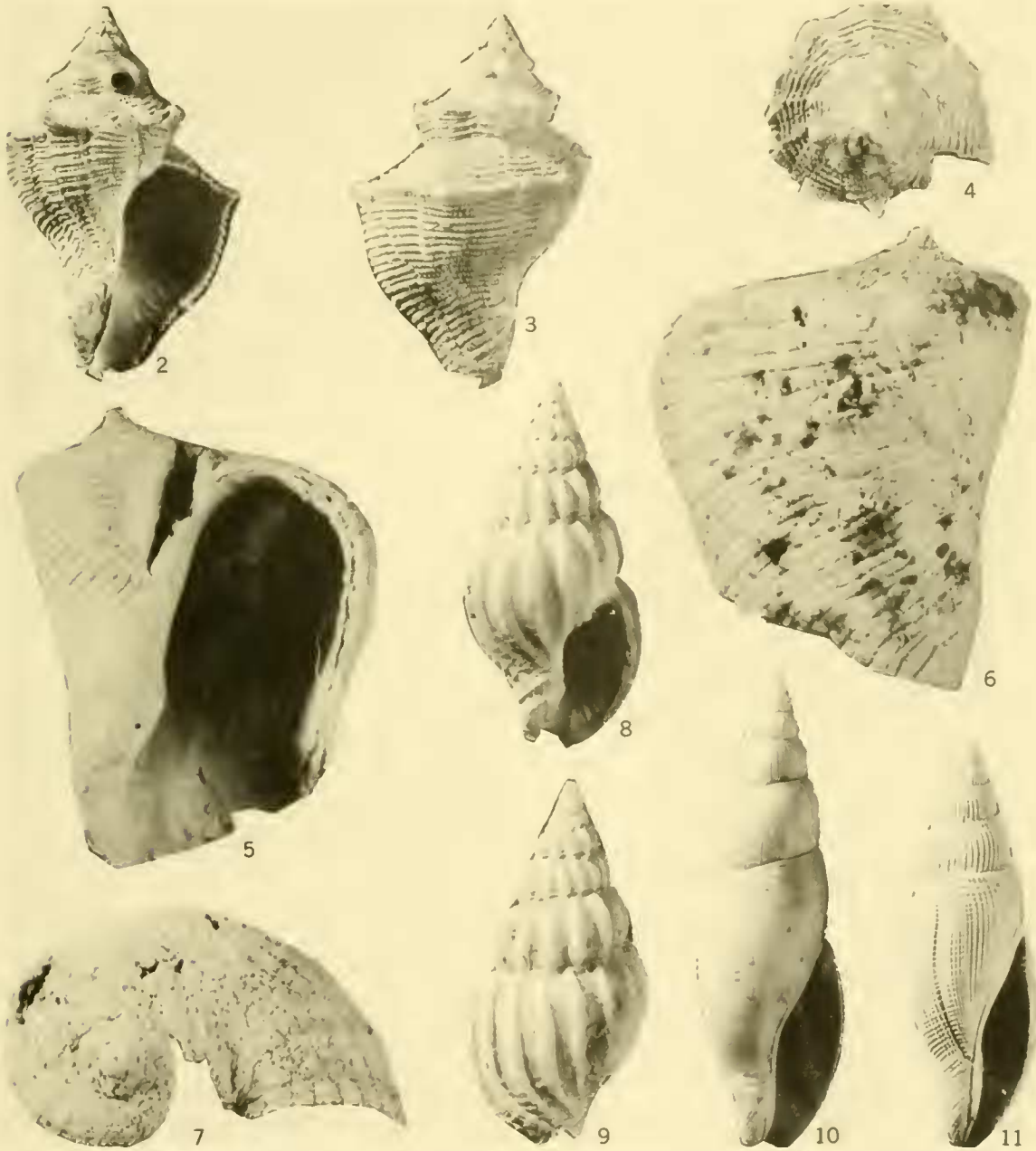
Shell small and thin with a low, flattened spire and widely expanded body whorl. Non-umbilicate, aperture broadly triangular, outer lip thin, inner lip wide with a concave columellar callus that extends the full length of the aperture. Sculpture consisting of about 30 shallow spiral grooves that produce low-flat-topped spiral ribs. Measurements of the holotype, USNM 214348, SM242-444A: height 11.9 mm, diameter 10.0 mm.

The single small New Hebrides fossil may be immature. It resembles the variable living type species, *Coralliophila violacea* Kiener, but has a

flatter spire, a thinner and more expanded outer lip. In overall shape and sculpture *C. mallicki* resembles some of the fossil species assigned to *Concholepas* (Beu, 1970; Vokes, 1972), but the ex-

cavated columellar area of the New Hebrides shell seems to place it clearly in *Coralliophila*.

The species is named for Dr. D. I. J. Mallick, formerly Senior Geologist of the New Hebrides



FIGS. 2-4. *Latiaxis (Tolema) blowi* new species. Holotype, USNM 214250. X 2 5-7 *Coralliophila mallicki* new species. Holotype. X 6 8-9 *Phos bakeri* new species. Holotype. USNM 214307. X 3 10 *Metula kerensis* new species. Holotype, USNM 214288. X 3 11 *Metula santoensis* new species. Holotype. X 2.

Geological Survey, who discovered the fossil beds on the Kere River, and collected this and many other unique shells.

Occurrence: A single specimen from SM242 on the Kere River.

Genus *Latiaxis* Swainson

Swainson, 1840, Treatise on malacology, p. 306.

Type (by subsequent designation, Gray, 1847, Proc. Zool. Soc. London, pt. 15, p. 135): *Purpura mawae* Gray. Holocene, Indo-Pacific.

Subgenus *Tolema* Iredale

Iredale, 1929, Records Australian Mus., v. 17, no. 4, p. 186.

Type (ICZN Op. 911, 1970): *Purpura sertata* Iredale (= *Tolema australis* Laceron). Holocene, Australia.

Latiaxis (Tolema) blowi new species

Figs. 2-4

Shell biconic, strongly turreted. Protoconch consisting of about two whorls, coiled at a slight angle to the axis of the spire, followed by six sculptured whorls. Surface of shell covered by close-set scaly spiral cords; shoulder sharply elevated with triangular open scales that are more prominent on early whorls than on the body whorl; axial ribs, about 9 on penultimate whorl, are broadly rounded. Body whorl constricted anteriorly; aperture, triangular outer lip thin, made lirate within by the exterior spirals; inner lip thinly callused; umbilicus a shallow chink.

Measurements of the holotype (only specimen), USNM 214250: height 28.0 mm, diameter 18.3 mm.

L. blowi seems most closely related to *L. filaregis*, a Holocene species described by Kurohara (1959), but that species is more slender, more coarsely sculptured and less constricted anteriorly.

This species is named for Warren Blow of the U.S. Geological Survey who collected the only specimen from USGS locality 25715 on the Kere River outcrops, Santo, New Hebrides.

Occurrence: U.S. Geological Survey station 25715 on the Kere River. *L. filaregis* Kurohara, the related form mentioned above, occurs at depths of 50-100 meters off Shikoku, Japan (Habe, 1964, p. 86).

Family *Buccinidae* Genus *Phos* Montfort

Montfort, 1810, Conchyl. Syst. p. 495.

Type (by original designation): *Murex senticosus* Linnaeus. Holocene, southwest Pacific.

Phos bakeri new species

Figs. 8, 9

Medium in size, biconic. Protoconch consisting of four whorls, each of the lowest three with two fine spiral ribs on its lower half. Aperture broadly lenticular with a short and slightly twisted canal anteriorly; outer lip with a thin edge, thickened within and bearing short denticles; columella with two plaits, the anterior one larger. Sculpture consisting of strong smooth axial ribs, fourteen on the penultimate whorl, and many fine spirals that become coarse near the base. Measurements of the holotype, USNM 214307: height 18.4 mm, diameter 9.0 mm.

P. bakeri seems most closely related to *P. dingsi* described by MacNeil (1960, p. 74, pl. 3, fig. 21) from the Miocene Yonobara Clay, Shimajiri Formation, of Okinawa. That species, however, has more numerous axial ribs, some of which are clearly formed varices. *P. bakeri* is also related to a Japanese Holocene species, *P. hirasei* Sowerby (see Habe, 1964, p. 95, pl. 31, fig. 7) but that species is much larger, has well developed spiral cords and occasional varices.

This species is named for Mr. F. E. Baker, British District Agent on Santo, who assisted Thomas Waller and Warren Blow in many ways during their visit to the area in 1974.

Occurrence: Three shells from the Kere River outcrops at USGS locality 25715.

Genus *Metula* H. and A. Adams

H. and A. Adams, 1853, Genera of Recent Mollusca, v. 1, p. 84.

Type (by hidden tautonymy): *Buccinum hindsii* H. and A. Adams (= *Buccinum metula* Hinds). Holocene, Pacific coast of Panama.

Metula kerensis new species

Fig. 10

Shell small and slender; protoconch consisting of 2½ glassy convex whorls, followed by 5½ sculptured whorls. Sculpture consisting of fine, irregularly-spaced axials and close-set flattened

spirals. Sculpture on some specimens uniform over entire shell, on others the spiral immediately below the suture is more prominent than the others; there are occasional low varices. Aperture elongate, truncated anteriorly; outer lip thickened both anteriorly and posteriorly, smooth within save for a broad node posteriorly; columella concave, inner lip heavily callused.

Measurements of the holotype, USNM 214288: height 24.3 mm, diameter 7.3 mm.

M. kerensis differs from described species of *Metula* by the subdued nature of its sculpture. The pattern of axials and spirals are clearly seen only with the aid of a lens.

Occurrence: Represented by eight shells from the USGS localities 52715 and 52718 Kere River, Santo.

Metula santoensis new species

Fig. 11

Small to medium in size, slender, whorls gently convex, suture lightly impressed; protoconch not preserved. Sculpture consisting of close-set, slightly curved axial ribs that are stronger than the over-riding spirals, especially on the whorls of the spire; immediately below the suture and on the base the spirals are more widely spaced than elsewhere. Aperture elongate, outer lip thickened, crenulate within; inner lip smooth, heavily callused. Measurements of the holotype, BM (NH) GG19763: height 30 mm, diameter 9.8 mm.

M. santoensis closely resembles *M. elongata* Dall dredged off Japan in 57 fathoms of water (Dall, 1957, p. 166) but that species is longer and more slender.

Occurrence: Represented by two specimens, the holotype from station SM242 on the Kere River, and a smaller shell from river debris on the Sarakata River (SG79), Santo.

Family Nassariidae

Genus *Nassarius* Duméril

Duméril, 1806, *Zoologie analytique*, p. 167 (genus without species).

Type (by monotypy) Forriep, 1806, C. Duméril's *Zoologie analytique*, p. 167: *vide* Iredale, 1916, *Proc. Mal. Soc. London*, v. 12, p. 83): *Buccinum arcularis* Linnaeus. Holocene, western Pacific.

Subgenus *Alectrion* Montfort

Montfort, 1810, *Conch. Syst.* v. 2, p. 566.

Type (by original designation): *Buccinum papillosum* Linnaeus. Holocene, Indo-Pacific.

Nassarius (Alectrion) barsdelli new species

Figs. 12-15

Medium in size, thin, body whorl greatly inflated. Early whorls with rounded axial ribs crossed by fine spiral grooves; subsequent whorls may be slightly crenulated at the deeply channeled suture and may have a faint subsutural spiral groove; late whorls mostly smooth except for spiral grooves over the base of the body whorl. On some shells weak spirals can be seen over the entire body whorl (Figure 15). Aperture broadly lenticular, outer lip thin, columella smooth except for obscure corrugations near its base.

Measurements of the types: Holotype, USNM 214274 (Figs. 12-14) height 23.8 mm, diameter 14.0 mm; paratype, USNM 214278 (Fig. 15) height 23.8 mm, diameter 15.0 mm.

The new species is smaller than *N. glans* (Linnaeus) and is proportionately shorter and more inflated. None of the nearly 40 fossils has a denticle on the parietal wall and none shows a trace of color pattern. I first considered the fossil form as a new subspecies of *N. glans* (Linnaeus) but the later recovery of two incomplete but typically banded shells of *N. glans* from the outcrop on the Kere that yielded the fossils indicates that the two are distinct.

This species is named for Mark Barsdell, formerly of the New Hebrides Geological Survey, who, in 1974, aided Messrs. Waller and Blow in collecting on the rivers and in dredging.

Occurrence: Abundant in the Kere River outcrops, USGS locality 25715. *N. glans* (Linnaeus) lives today in many parts of the tropical Pacific (Cernohorsky, 1972, p. 180).

Bathynassa Ladd, new genus

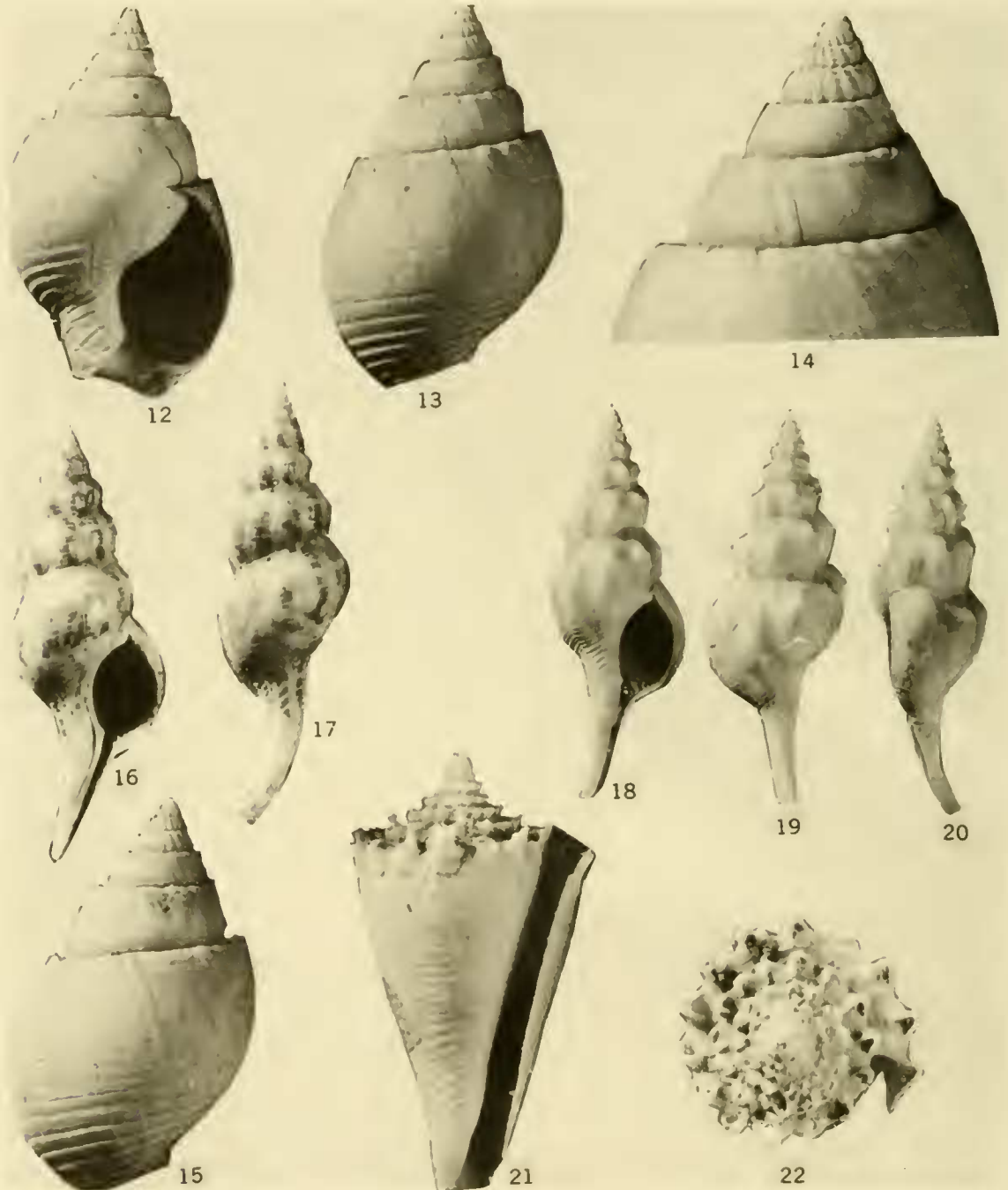
Type: *Bathynassa bolangoi* Ladd, new species. Pleistocene, Santo, New Hebrides.

Small, slender. Protoconch of three convex whorls, the middle one faintly keeled, the last more strongly keeled. Early whorls of teleoconch with sharply elevated axial ribs that are over-

ridden by weaker spirals; on later whorls axials and spirals become subequal; uppermost spirals on each whorl forming a rim that bounds a deeply excavated subsutural furrow. Aperture

broadly lenticular; inner lip callused, with a low denticle posteriorly; outer lip faintly lirate within, backed by a strong varix.

The genus is characterized particularly by its



FIGS. 12-15 *Nassarius (Alectrion) barsdelli* new species. 12, 13 *Holotype*, USNM 214274. $\times 2.5$. 14 *Apex of holotype*, $\times 5$. 15 *Paratype*, USNM 214278. $\times 2.5$. 16-20 *Fasciolaria (Pleuroploca) walleri* new species 16, 17 *Holotype*, USNM 214260. $\times 1$. (uncoated to show original color pattern) 18-20 *Paratype*, USNM 214261. $\times 1$. 21-22 *Kenyonia cf. chiangi (Azuma)* USNM 214291. $\times 6$.

deeply excavated, nearly flat-bottomed subsutural furrow.

***Bathynassa bolangoi* new species**

Figs. 34-40

Shell small, slender. Protoconch consisting of three gently convex glassy whorls; middle whorl with a trace of a median keel, the lowest whorl with a stronger keel. Teleoconch of six whorls; on early whorls strong axial ribs are overridden by weak spirals but on later whorls the axials and spirals are subequal in strength; on the base the spirals are sharply elevated and more widely spaced. A deep subsutural furrow has a gently concave floor that is crossed by the axial ribs. Under low magnification the furrow appears deeper than in Figs. 38 and 39 which are SEM photographs. Aperture broadly lenticular, inner lip thinly callused, the callus edge slightly elevated; columella smooth except for a low denticle posteriorly; outer lip weakly lirate within, backed by a strong varix. Siphonal canal short and broad.

Measurements of the types:

Holotype	USNM 214343	length 13.9 mm.	diameter 5.2 mm.
Paratype A	214344	12.8	5.2
B	214345	13.6	5.2
C	214346	(incomplete)	about 5

The fossils are more slender than the average nassarid but the protoconch of the fossil seems typically nassarid, likewise its aperture and outer lip varix. Its excavated, nearly flat-bottomed subsutural furrow separates it from other members of the family. I have not found a living or fossil species with a furrow of this type. Superficially, the new species resembles *Nassarius caelatus* A. Adams from Southeast Asia, but the latter is much larger, more obese and with weaker spiral threads.

This species is named for John Bolango of the New Hebrides Condominium Geological Survey who collected with Thomas Waller and Warren Blow when they visited Santo in 1974.

Occurrence: Seven shells from the Navaka River beds, all from the northern end of the outcrop area, stations 25736 and 25742. It may be that the beds in this area accumulated at somewhat greater depth than those farther south

on the Navaka or the beds on the Kere River to the east.

Family Fasciolaridae

Genus *Fasciolaria* Lamareck

Lamareck, 1799, *Prodrome d'une nouvelle classification des coquilles...Mém. Soc. Hist. nat., Paris 1*, p. 73.

Type (by monotypy): *Murex tulipa* Linnaeus. Holocene, Caribbean.

Subgenus *Pleuroploca* P. Fischer

Fischer, P., 1884, *Jour. de Conchyl.*, vol. 32, p. 169.

Type (by monotypy): *Murex trapezium* Linnaeus. Holocene, Indo-Pacific.

***Fasciolaria (Pleuroploca) walleri* new species**

Figs. 16-20

Shell small, slender, fusiform. Protoconch consisting of 2½ smooth, convex whorls, followed by 8 sculptured whorls. Sutures appressed; aperture broadly lenticular, extended anteriorly into a long and strongly recurved siphonal canal; outer lip lirate within; columella callused with a low broad fold, the callus with a detached outer edge. Sculpture consisting of broad, rounded axial folds, 8-10 on the penultimate whorl; folds becoming less well developed on the latter half of the body whorl; all whorls covered by close-set weak spirals that are a little stronger on the folds than in the intervening valleys; spirals much stronger at the base of the body whorl. Crest of each axial fold with a band of reddish-brown color, the color deeper between the fine spirals than on their crests.

Measurements of the types: Holotype, USNM 214260: length 66.6 mm, diameter 22.6 mm. Paratype, USNM 214261: length 58.7 mm, diameter 21.3 mm. A specimen in the Mallick collection (SM242-63A) is 71.4 mm in length.

F. walleri resembles *F. filamentosa* (Röding), a common and widely distributed species in existing Indo-Pacific seas, but is smaller, has finer spiral sculpture and a much longer and more strongly recurved siphonal canal.

This species is named for Dr. Thomas R. Waller of the Smithsonian Institution who organized a collecting trip to Santo, during the course of which the types of this species and many other fossils were collected.

Occurrence: Four specimens from the Kere River, (USGS locality 257115 and SM242).

Family Turridae

Genus *Epidirona* Iredale

Iredale, 1931, Records Australian Mus., v. 18, no. 4, p. 225.

Type (by original designation): *Epidirona hedleyi* Iredale. Holocene, Australia.

Epidirona greenbaumi *new species*

Figs. 23-26

Shell medium in size, stout, biconic. Protoconch of two glassy convex whorls followed by eight and one-half sculptured whorls. Aperture lenticular, outer lip thin, lirate within; inner lip callused; sinus moderately deep; anterior canal short, wide, slightly flaring. Sculpture consisting of strong primary spirals that alternate with weaker secondaries; primary ribs beaded by axials (about 25 on penultimate whorl); upper two spirals set off by a groove to form a distinct sub-sutural band; on the whorls of the spire the axials are nearly straight but become slightly sinuous on the body whorl.

Measurements of the holotype, USNM 214306 from USGS locality 257115: length 20.8 mm, diameter 8.3 mm. Paratype, BM(NH)GG19762 from SM242: length 20.0 mm, diameter 8.1 mm.

E. greenbaumi is closely related to *E. perksi* (Verco), a species that lives off South Australia (Verco, 1896, p. 224, pl. 17, figs. 3, 3a-c). I have not seen shells of *E. perksi* but, judging by Verco's detailed account, it appears that the New Hebrides fossil has coarser sculpture, particularly on the body whorl, a more prominent collar and straighter axials on the whorls of the spire.

This species is named for Dr. David Greenbaum of the New Hebrides Condominium Geological Survey who mapped the geology of parts of Santo and made large collections of fossils from outcrops on the Kere River and on other streams.

Occurrence: Two shells from USGS locality 257115 and three from SM242 on the Kere River. Verco's closely related species, *E. perksi*, was dredged alive in 15 fathoms (27 meters) off South Australia.

Genus *Euclathurella* Woodring

Woodring, 1928, Carnegie Inst. Washington, Pub. 385, p. 187.

Type (by original designation): *Clathurella vendryesianus* Dall. Miocene, Jamaica.

Euclathurella santoensis *new species*

Figs. 27-30

Small, slender, fusiform, high spired. Protoconch consisting of about four convex whorls, the first three smooth, the last bearing curved, close-set axials; teleoconch of 6 whorls with thin, widely spaced axials, about a dozen on penultimate whorl. Axials extend from suture to suture and are slightly sigmoid with a sharp peripheral angulation more than one-third of the distance below the suture; below the angulation the rib is convex in profile, above it is flat; surface of whorl between axials is smooth; a few spiral threads are discernible on the base under magnification. Aperture long and narrow, its length exceeding that of the spire; sinus deep and broadly rounded; outer lip with a thin edge but callused posteriorly and backed throughout its length by a prominent varix; columellar area thinly callused except for a pad below the anal sinus; anterior canal long, wide and rather abruptly truncated. Measurements of the holotype, USNM 214337: height 14.0 mm, diameter 4.9 mm.

I could find no close relative of *E. santoensis*. Its axial ribs are more widely spaced than those of the Caribbean type species, *E. vendryesianus*, and the spiral sculpture of the new species is mostly absent. The protoconchs of the two are similar but that of the New Hebrides shell has more whorls. Our new species superficially resembles *Eucythara funiculata* (Reeve), but lacks the small teeth in the columellar wall and outer lip. We are provisionally placing *santoensis* in *Euclathurella*.

Occurrence: Four shells from USGS locality 257118 on the Kere River.

Family Conidae

Genus *Kenyonia* Brazier

Brazier, 1896, Linnean Soc. New South Wales, vol. 21, p. 346.

Type (by monotypy): *Kenyonia pulcherrium* Brazier, Holocene, New Hebrides.

Kenyonia cf. *chiangi* (Azuma)

Figs. 21-22

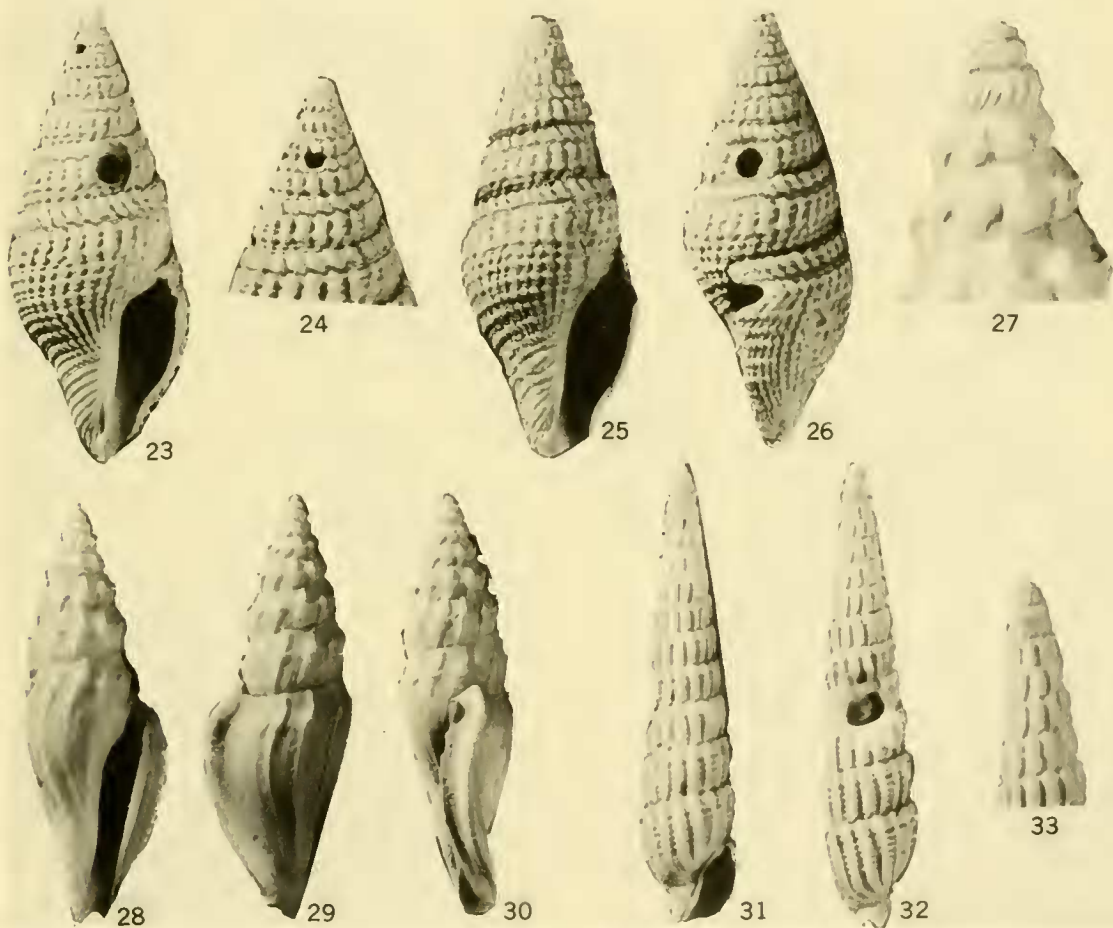
Shell, small, conical, with a low spire culminating in a protoconch of at least two slightly convex glassy whorls. Shoulder sharply angled, bearing a series of elevated triangular plates that form cup-like structures opening inward and forward; fifteen cups on body whorl; cups give shell a stellate appearance when viewed apically. Whorls of spire with close-set spiral grooves that are overridden by finer, curved, axial threads. Body whorl with shallow wavy grooves and finer irregularly spaced axial lines.

Aperture elongate; columella slightly concave near base; outer lip thin, straight. Much of the lower third of the body whorl is faintly tinged with brown color.

Measurements of the figured specimen, USNM 214291: length 10.4 mm, diameter 5.9 mm.

The fossil may be conspecific with the species described by Azuma as *Taranteconus chiangi* (1972, p. 59, figs. 5, 6) and recently figured by Okutani (1975, p. 194, pl. 10, fig. 27) but the fossil is more slender anteriorly and may have stronger spiral sculpture.

The fossil has many of the unusual features described for the type species, *K. pulcherrima*, but



FIGS. 23-26 *Epidirona greenbaumi* new species 23 *Holotype*, USNM 214306. $\times 3$ 24 *Apex of holotype*. $\times 5$ 25, 26 *Paratype*. $\times 3$ 27-30 *Euclathurella santoensis* new species 27 *Apex of holotype*. (slightly retouched). $\times 14$ 28-29 *Holotype*, USNM 214337. $\times 4$ 31-33 *Terebra* (*Microtrypetes*) *kerensis* new species 31, 32 *Holotype*, USNM 214340. $\times 6$ 33 *Apex of holotype*. (slightly retouched). $\times 10$.



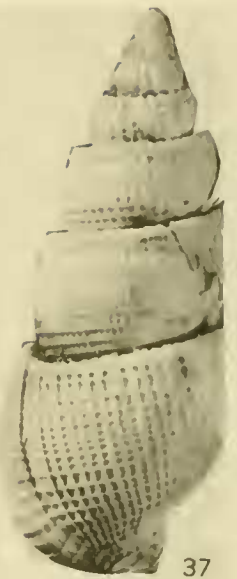
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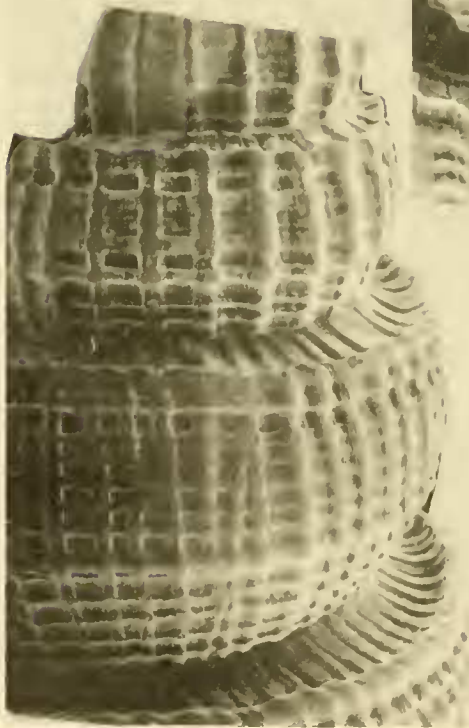
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the fossil is smaller by one-third, is proportionately wider, has a lower spire, fewer peripheral plates and a straight outer lip. These two New Hebrides shells differ greatly from other cones and from most turrids. The fossil here described may be ancestral to the Holocene shell described by Brazier (1896, p. 346); unfortunately, Brazier's single shell has apparently been lost.

Occurrence: A single specimen from USGS locality 25731 on the Navaka River. Azuma's type was collected on the South China Sea at a depth of 200 fathoms (365 meters) Okutani found living specimens fairly common on banks at depth of 150-190 meters in Japanese waters.

Family Terebridae

Genus *Terebra* Bruguière

Bruguière, 1789, Ency. méthodique, Histoire naturelle des Vers, vol. 1, p. 15 (genus without species).

Type (by monotypy): Lamarck, 1799, Soc. Histoire Nat. Paris, Mém. p. 79: *Buccinum subulatum* Linnaeus. Holocene, western Pacific.

Subgenus *Microtrypetes* Pilsbry and Lowe

Pilsbry and Lowe, 1932, Proc. Acad. Nat. Sci. Phil., vol. 84, p. 43.

Type (by original designation): *Terebra iola* Pilsbry and Lowe. Holocene, west coast of America.

Terebra (Microtrypetes) kerensis new species

Figs. 31-33

Small, very slender; a protoconch of about three smooth whorls is followed by eleven sculptured whorls that are flat-sided but slightly shouldered. Sculpture consisting of sharp, straight axial ribs, sixteen present on penultimate whorl, and narrow spiral grooves, 4-5 on each whorl; one groove close to the suture is larger than the others, suggesting the boundary of a subsutural band. Aperture lenticular, drawn out to form the anterior canal; columella with a single low fold.

Measurements of the holotype, USNM 214340: height 10.0 mm, diameter 2.0 mm.

This little species resembles *T. spei* described by Brown and Pilsbry (1913, p. 497, fig. 1) from the Pleistocene of Panama but is more slender, has less curvature in its axials and its whorls are slightly shouldered; also, the subsutural groove on the species here described is less developed than on the shells of the Panama species. *T. kerensis* is more slender than *T. iola*, type of the subgenus and has fewer spiral grooves than that species.

Occurrence: Many specimens from USGS locality 25715 on the Kere River.

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FIGS. 34-40 *Bathynassa bolangoi* new genus and new species. Figures 38-40 taken by Scanning Electron Microscope. **34, 35** Holotype, USNM 214343. $\times 6$. **36, 37** Paratype A, USNM 214344. $\times 6$. **38** Paratype B, USNM 214345. $\times 21$. **39** Paratype B, USNM 214345. $\times 26$. **40** Paratype C, USNM 214346. $\times 72$.

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